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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,861	11/26/2002	Carlo Waldfried	ATI-0016	3384
23413	7590	05/15/2007		
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			EXAMINER MARKOFF, ALEXANDER	
			ART UNIT	PAPER NUMBER
			1746	
			MAIL DATE	DELIVERY MODE
			05/15/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/065,861

Applicant(s)

WALDFRIED ET AL.

Examiner

Alexander Markoff

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-10 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10 and 12-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/17/07 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for UV radiation in the claimed range, does not reasonably provide enablement for X ray radiation in the claimed range. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. Claim 2, which depends from claim 1 recite photons with wavelengths 150-500 nm generated by X ray radiation. X ray radiation is not in the claimed range. X ray radiation wavelengths are in the range 0.01-10 nm.

For the examination purposes the claim is interpreted as requiring UV radiation, i.e. the radiation in the range recited by claim 1 in the UV range – 150-400 nm.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-10 and 12-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Han et al as evidenced by any one of Chace et al (US Patent No 6,495,825), Ueno (US 20030003243), Lee (US 6,021,672), Mizumura et al (US 2006/0065624), Tokunaga (US 5,151,296) and Koshimizu (US 5,322,590).

Han et al teach a method for removing residue from low K dielectric as claimed. See entire document, especially Detailed Description. It is noted that the subjecting the dielectric to plasma disclosed by Han et al would inherently result in exposure the dielectric to photons as claimed.

Chace et al evidence that exited gases disclosed by Han et al produce radiation in the claimed range. See at least column 4, lines 4-26.

Ueno evidences that exited gases disclosed by Han et al produce radiation in the claimed range. See at least part [0035].

Lee evidences that exited gases disclosed by Han et al produce radiation in the claimed range. See at least column 5, lines 5-10.

Mizumura et al evidence that exited gases disclosed by Han et al produce radiation in the claimed range. See at least parts [0027] and [0030].

Tokunaga evidences that exited gases disclosed by Han et al produce radiation in the claimed range. See at least column 5, lines 38-48.

Koshimizu evidences that exited gases disclosed by Han et al produce radiation in the claimed range. See at least Detailed Description and Examples.

### ***Response to Arguments***

3. Applicant's arguments filed 1/17/07 have been fully considered but they are not persuasive.

The applicants cited US 5,543,687 and allege that hydrogen discharge would produce only 120 nm wavelengths.

This is not persuasive. The cited document is directed to a specific lamp and does not show the spectrum of the hydrogen discharge in the range above 160 nm. The fact that hydrogen discharge produces wavelengths at 120 nm does not negate the fact that the referenced discharge produces the wavelengths in the claimed region.

This time Ueno, Lee, Mizumura et al, Tokunaga and Koshimizu are also cited to evidence the fact, which the applicants are arguing.

The applicants also cited US Patent No 6,492,186 and argue that the spectrum of the plasma in a specific example of the oxygen-free plasma process provides very little UV light (<400 nm). The applicants state that the peak at 388 nm is due to the emission of the product of the process.

The applicants' arguments are not persuasive.

First, the data presented shows significant radiation in the range around 480-500 nm (which is in the claimed range). Thus the presented data supports the examiner's position.

Second, the claims do not exclude the radiation from any source, including the radiation produced by the products of the plasma. Thereby, the radiation at 388 nm would also meet the claimed limitation. Thus, the presented data supports the examiner's position.

Third, the presented data does not show what radiation is in the range 150-200. This range is also claimed and the hydrogen discharge has a peak at 161 nm.

Fifth, the presented data is only for one of the disclosed embodiments (forming gas). Han et al also disclose other embodiments (fluorine containing gasses and their mixtures), which would produce the radiation in the claimed range, as evidenced by the cited documents.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alexander Markoff  
Primary Examiner  
Art Unit 1746

AM